CLAIMS

What is claimed is:

1.   A method for tracking motion across a surface, said method comprising:

creating an interference pattern by reflecting light from said surface;

producing, as a result of a sensor moving across said surface, at least one signal pattern corresponding to a detection of an aspect of said interference pattern; and

associating said detected aspect with an assumed value to determine a distance traveled by said sensor.

2.   The method of claim 1 further comprising:

using, as said assumed value, a statistical average of anticipated values for said interference pattern.

3.   The method of claim 1 wherein said light is coherent light, and wherein said aspect is a dimension of a single speckle or a dimension between two speckles.

4.   The method of claim 3 wherein said assumed value is an average width or length of said speckles.

5.   The method of claim 4 wherein said average width or length of said speckles is statistically derived from a range of anticipated speckle widths or lengths.

6.   The method of claim 1 wherein said sensor is incorporated into a computer navigational device.

7.   The method of claim 6 further comprising:

linking a plurality of sensors, wherein each sensor produces a signal pattern corresponding to a detection of an aspect of said interference pattern; and

comparing said signals of said linked sensors to determine a direction traveled by said computer navigational device.

8.   A system for tracking movement of a device with respect to a surface, said system comprising:

sensors within said device, said sensors detecting signal patterns relating to motion of said sensors relative to an interference pattern; and

a processor for comparing said detected signal patterns and for determining a distance moved by said device with respect to the surface.

9.   The system of claim 8 wherein certain of said sensors are linked together and wherein said processor is further operative for comparing signals from linked ones of said sensors to determine a direction of movement for said device.

10.   The system of claim 8 wherein said comparing comprises assuming an aspect of said interference pattern is a constant value.

11.   The system of claim 8 further comprising:

a coherent light source within said device, said coherent light source creating said interference pattern.

12.   The system of claim 11 wherein said interference pattern comprises speckles and wherein said signal patterns are dependant on at least one dimension of said speckles, and wherein said determining comprises correlating an assumed value for said at least one dimension to said distance moved by said device.

13.   The system of claim 12 wherein said assumed value is statistically derived from a range of anticipated values for said at least one dimension.

14.   The system of claim 8 wherein said device is a computer navigational device.

15. A device to input navigational information into a computer, said device comprising:

a source of electromagnetic radiation producing an interference pattern; and

an arrangement of sensors, wherein each of said sensors produces a signal pattern, said sensors producing a plurality of signal patterns such that when at least two of said signal patterns are linked together the resulting signal can be used to determine a direction of movement of said device.

16. The device of claim 15 wherein said source is a coherent light source and wherein said interference pattern is comprised of speckles; and

wherein said signal patterns are dependent upon detection of a dimension of at least one of said speckles.

17. The device of claim 16 wherein said arrangement comprises at least three sensors arrayed in a first line and at least three sensors arrayed in a second line, wherein said first line and said second line are perpendicular.

18. The device of claim 17 wherein an assumed value for said dimension is the statistical average of anticipated values for said speckle dimension.

19. The device of claim 16 wherein said arrangement comprises a plurality of sensors arrayed in an approximate circle with at least one sensor near the approximate center of said circle.

20. The device of claim 19 wherein assumed value for said dimension is the statistical average of anticipated values for said speckle dimension.